REMARKS/ARGUMENTS

Claims 1, 3, 5-12, 14, 15, 17, 18, 20, 22, 23, 25 and 26 are pending in the present application. Claims 1, 3, 5, 6, 8-11, 15, 17, 18, 20, 22, 23 and 25 were amended; and claims 4, 13, 16 and 21 were newly canceled. New claim 26 was added. Applicants have carefully considered the cited art and the Examiner's comments in the Final Office Action dated March 21, 2007, and believe the claims currently in the case patentably distinguish over the cited art and are allowable in their present form. Reconsideration is, accordingly, respectfully requested in view of the above amendments and the following comments.

I. 35 U.S.C. § 102, Anticipation

The Examiner has rejected claims 1-3, 15, 17, 18-20 and 22-25 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,754,839, to Pardo et al. (hereinafter "Pardo"). This rejection is respectfully traversed.

Claim 1 as amended herein is as follows:

> 1. A method in a data processing system for processing instructions, the method comprising:
> responsive to receiving an instruction in an instruction cache in a processor in the data processing system, determining whether an indicator associated with the instruction is present;
> responsive to determining that an indicator associated with the instruction is present, enabling counting of occurrences of at least one selected event that is associated with execution of the instruction;
> counting the occurrences of the at least one selected event during the execution of the instruction if counting is enabled for the instruction; and
> responsive to determining that an indicator associated with the instruction is not present, executing the instruction without enabling counting the occurrences of the at least one selected event.

A prior art reference anticipates a claimed invention under 35 U.S.C. § 102 only if every element of the claimed invention is identically shown in that single prior art reference, arranged as they are in the claims. *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). All limitations of a claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the reference broadly teaches. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983).

Applicants respectfully submit that Pardo does not identically show every element of the claimed invention arranged as they are in the claims; and, accordingly, does not anticipate the claims. With respect to claim 1, in particular, Pardo initially fails to teach or suggest the claimed step of "responsive to receiving an instruction in an instruction cache in a processor in the data processing system, determining whether an indicator associated with the instruction is present." Instead, Pardo discloses adding watchpoint indications (which the Examiner construes as corresponding to the indicator of the claims) to an instruction while the instruction is in the instruction queue (see col. 5, line 50-col. 6, line 13 of Pardo). Inasmuch as the "indicator" in Pardo is not added to an instruction until after the instruction is in the instruction queue, Pardo cannot disclose determining whether an indicator associated with the instruction is present. "responsive to receiving an instruction in an instruction cache in a processor in the data processing system."

Pardo also does not disclose or suggest "responsive to determining that an indicator associated with the instruction is present, enabling counting of occurrences of at least one selected event that is associated with execution of the instruction" as recited in claim 1. Pardo, at best, discloses that a counter may be provided to count the number of watchpoints, however, there is no disclosure or teaching of enabling such counting "responsive to determining that an indicator associated with the instruction is present" as now recited in claim 1, or that what is counted is "occurrences of at least one selected event that is associated with execution of the instruction." Pardo does not discuss how counting of watchpoints is enabled and does not disclose counting of occurrences of at least one selected event responsive to determining that an indicator associated with an instruction is present.

Pardo also does not disclose "responsive to determining that an indicator associated with the instruction is not present, executing the instruction without enabling counting the occurrences of the at least one selected event" as now recited in claim 1. Pardo discloses counting watchpoints but does not disclose executing an instruction without counting occurrences of the at least one selected event responsive to determining that an indicator associated with the instruction is not present.

For at least all the above reasons, claim 1 is not anticipated by Pardo and patentably distinguishes over Pardo in its present form.

Independent claims 18 and 23 have been amended in a manner similar to claim 1, and are also not anticipated by Pardo for similar reasons as discussed above with respect to claim 1.

Independent claim 15, as amended herein is as follows:

15. A method in a data processing system for monitoring access to data, the method comprising:

identifying a memory location associated with an indicator; and

enabling counting of occurrences of at least one selected event associated with accesses to the memory location, wherein enabling counting of occurrences of at least one selected event associated with accesses to the memory location comprises:

sending a signal from a data cache to a performance monitor unit to enable the performance monitor unit to count the occurrences of the at least one selected event associated with accesses to the memory location; and

incrementing a counter in the performance monitor unit for each occurrence of the at least one selected event.

Pardo does not disclose or suggest that a memory location associated with an indicator is identified or that counting occurrences of at least one selected event associated with accesses to the memory location is enabled, wherein the enabling comprises "sending a signal from a data cache to a performance monitor unit to enable the performance monitor unit to count the occurrences of the at least one selected event associated with accesses to the memory location", and "incrementing a counter in the performance monitor unit for each occurrence of the at least one selected event" as now recited in claim 15. Claim 15, accordingly, is not anticipated by and patentably distinguishes over Pardo in its present form.

Claim 3 depends from claim 1, claim 17 depends from claim 15, claim 20 depends from claim 18 and claim 25 depends from claim 23. These claims are also not anticipated by Pardo, at least by virtue of their dependency. Independent claim 22 recites similar subject matter as claim 15 and is also not anticipated by Pardo for similar reasons as discussed above with respect to claim 15.

Therefore, the rejection of claims 1-3, 15, 17, 18-20 and 22-25 under 35 U.S.C. § 102 has been overcome.

II. 35 U.S.C. § 103, Obviousness

The Examiner has finally rejected claims 4-14, 16 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Pardo in view of Merten (A Hardware-Driven Profiling Scheme for Identifying Program Hot Spots to Support Runtime Optimization).

In rejecting the claims, the Examiner acknowledges that Pardo does not disclose a system utilizing a cache as specified in claims 4-14, 16 and 21 and cites Merten as teaching "the feature to detect cache misses". The Examiner states that it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the cache feature taught by Merten in the system of Pardo.

Claim 4 has been canceled. Claims 5-10 depend from and further restrict claim 1. Merten does not supply the deficiencies in Pardo as described above. Claims 5-10, accordingly, patentably distinguish over Pardo in view of Merten, at least by virtue of their dependency.

Independent claim 11, together with claims 12 and 14 dependent thereon, also patentably distinguish over Pardo in view of Merten, and claims 13, 16 and 21 have been canceled.

Therefore, the rejection of claims 4-14, 16 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Pardo in view of Merten has been overcome.

III. 35 U.S.C. § 103, Obviousness

The Examiner has further finally rejected claims 4-14, 16 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Pardo in view of Ammons et al., Exploiting Hardware Performance Counters with Flow and Context Sensitive Profiling. This rejection is respectfully traversed.

In rejecting the claims, the Examiner again acknowledges that Pardo does not disclose a system utilizing a cache as specified in claims 4-14, 16 and 21 and cites Ammons as teaching "the feature to detect cache misses". The Examiner states that it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the cache feature taught by Ammons.

Ammons also does not supply the deficiencies in Pardo as discussed in detail above with respect to claim 1. For similar reasons as discussed above with respect to the rejection of the claims as being unpatentable over Pardo in view of Merten, claims 5-12 and 14 also patentably distinguish over Pardo in view of Ammons.

Therefore, the rejection of claims 4-14, 16 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Pardo in view of Ammons has been overcome.

IV. Conclusion

For at least all the above reasons, claims 1, 3, 5-12, 14, 15, 17, 18, 20, 22, 23 and 25 and newly added claim 26 patentably distinguish over the cited art and are allowable in their present form. This application is, accordingly, believed to be in condition for allowance, and it is respectfully requested that the Examiner so find and issue a Notice of Allowance in due course.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

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Respectfully submitted,

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